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TITLE: Real time conversational toy having secure playback response

Abstract Text (1):

A real time conversational verbal interactive toy apparatus capable of providing a conversational type response to an interrogatory message from a removably insertable magnetic storage medium which comprises a plurality of coextensive multipurpose audio tracks contained in a housing includes a multipurpose selection apparatus for directly selecting one of the tracks for reproducing the selected information stored thereon, such as a multiple choice response to the interrogatory message, an insertion security apparatus operatively associated with a receptacle therein for providing an insertion condition for the inserted received magnetic storage medium housing with respect to the receptacle, the storage medium housing having a playback authorization code disposed thereon, the insertion security apparatus comprising elements responsive to this code for providing the insertion condition therefrom, and a condition responsive network operatively associated with the insertion security apparatus for controllably enabling the provision of a secure selected multiple choice playback response from the storage medium. Each track stores information in reproducible segments which are spatially related in time along the tracks and related in content to the corresponding segments on the other coextensive tracks of the plurality for providing the real time conversational type response. The condition responsive network is responsive to the provision of the insertion condition for providing the enable condition to a playback head only when the provided insertion condition corresponds solely to the playback authorization code so that only media capable of providing the aforementioned type of response may be employed.

Brief Summary Text (13):

The aforementioned removably insertable magnetic storage medium having a housing for the storage medium may be such as a reel-to-reel type cassette with the verbal interactive toy including insertion security means operatively associated with the receptacle means for providing an insertion condition for the inserted received magnetic storage medium housing with respect to the receptacle means and condition responsive means operatively associated with the insertion security means for controllably enabling the provision of the selected playback response from the multitrack storage medium. The storage medium housing has means disposed thereon comprising an authorization code for playback of the storage medium, such as an optically readable code from which a corresponding digital signal may be provided. The insertion security means comprises means responsive to the playback authorization code for providing the insertion condition therefrom, such as an illumination source and a photodetector matrix array wherein the optically readable authorization code provided on the housing comprises a plurality of light transmitting passageways in the housing disposable in the insertion security means between the illumination source, such as a plurality of light emitting diodes, and the photodetector matrix array, such as a plurality of phototransistors, in optical registration therewith for enabling selective illumination of the photodetector matrix array through the housing light transmitting passageways for providing digital signal information dependent on the selectively illuminated photodetector

matrix array. If desired, light transmitting optical fibers may be utilized with each one of the fibers being optically registrable with a given one of the passageways for illuminating a given one of the photodetectors in the array. The playback means, such as the tape drive, audio amplifier and magnetic playback head, have an enable condition and a disable condition for enabling the provision of the selected playback response recorded on the multitrack magnetic storage medium therefrom only in the enable condition thereof. The condition responsive means may preferably include a logic gating network, such as an AND gate operatively connected to receive the digital signal information corresponding to the predetermined authorization code for providing a first authorization logic output condition when this information corresponds to the predetermined authorization code, an OR gate operatively connected to receive the digital signal information corresponding to an unauthorized playback code for providing a first state output condition when it corresponds to this unauthorized code and a second state output condition when it does not correspond to this unauthorized code, a logic inverter operatively connected to the output of the OR gate for inverting the state output condition thereof for providing a second authorization logic output condition therefrom only when the second state output condition is provided thereto from the OR gate, and another AND gate operatively connected to the previous AND gate and OR gate outputs for providing the enable condition solely when the first and second authorization logic output conditions are present. This logic gating network is responsive to the insertion condition for providing the enable condition to the playback means only when the provided insertion condition corresponds to a predetermined playback authorization code, whereby playback security for the verbal interactive toy apparatus is provided. Preferably, the verbal interactive toy apparatus includes power source means for providing power to enable operation of the playback means with the condition responsive means being operatively connected between the power source and the playback means for enabling provision of the power to the playback means solely in the enable condition thereof. The enable condition providing means may comprise a transistor switch operatively connected to the aforementioned AND gate output which provides the enable condition therefrom for providing the enable condition solely when the first and second authorization logic output conditions are present.

Brief Summary Text (14):

The aforementioned playback security system which comprises the insertion security means and condition responsive means may also be achieved by employing means disposed on the cassette housing having passageways therein which are registrable with pins insertable therethrough when the proper passageway configuration or authorization code is provided, thereby placing the cassette housing in the aforementioned playback position. In such an instance, a switch activation means, such as a protrusion, such as a globe, from the cassette housing are provided which cooperate with a spring-biased microswitch, which switch is normally biased to the disable condition, for closing the microswitch to provide the enable condition. This microswitch, in such an instance, is preferably connected between the aforementioned power supply and the playback means to control the provision of power thereto. Moreover, the verbal interactive toy apparatus may include a belt pack type housing having a plurality of uniquely configured apertures with the cassette housing comprising a belt-pack having an equal plurality of complementary protrusions thereon and with one or more thereof comprising such switch activation means for operating one or more of such microswitches, such as a series circuit arrangement thereof.

Drawing Description Text (6):

FIG. 5 is a diagrammatic illustration, similar to FIG. 4, of the complete alternative embodiment of the playback security system of the present invention showing an exemplary preferred reel-to-reel cassette, in a side view thereof, in position with an insertion condition corresponding to a predetermined playback authorization code;

Detailed Description Text (4):

As is shown and preferred in FIG. 1, a conventional power supply 64, such as either a DC power supply or an AC power supply, depending on the desired operating conditions of the verbal interactive toy apparatus 20, is provided for supplying power to enable the operation of the motor 32 and the audio amplifier 36 and balance of the verbal interactive toy apparatus 34-58-60-62-38. As presently preferred, a DC power supply is preferable when the apparatus 20 comprises the verbal interactive or conversational user response toy since it will then have one of the normally desired toy attributes of portability. In either event, with respect to FIG. 1, assuming that the audio amplifier 36 and the tape drive 28-30-32 have power supplied thereto, when any one of the switches 40 through 56, inclusive, is closed, the output of the corresponding audio track A, B, C or D, all of which are being provided to audio amplifier 36 by multitrack playback head 34, is selectively provided to the audio output device 58 or 60 to be heard by the user. A conventional on/off switch 66 is also preferably provided for enabling the user to conventionally turn the apparatus 20 on or off. However, as shown and most preferred in FIG. 1, the preferred verbal interactive toy apparatus 20 also preferably includes the preferred playback security apparatus or retrieval media security system 68 of the present invention, to be described in greater detail hereinafter with respect to FIGS. 2-7, 9-12 and 14-17, which is preferably operatively connected at points 70 and 72 between the audio amplifier 36 and the power supply 64 in FIG. 1, or the audio amplifier 36a and the power supply 64 in FIG. 8, so as to enable the provision of power to the verbal interactive apparatus 20 (FIG. 1) or 20a (FIG. 8) solely when the inserted tape cassette housing 26 enables the provision of a predetermined playback authorization code whose detection provides an enable condition to complete the circuit between points 70 and 72. Thus, as will be described in greater detail hereinafter, even if on/off switch 66 is closed, the verbal interactive toy apparatus 20 or 20a will not operate unless the predetermined playback authorization code has been detected by the preferred playback security system 68 so as to enable the completion of the circuit between points 70 and 72.

Detailed Description Text (5):

Before describing the overall verbal interactive toy apparatus 20 and its operation in any greater detail, the presently preferred embodiment of the playback security system 68 employed therein shall now be described in greater detail hereinafter, initially with reference to FIGS. 2, 7, 14, 15 and 17. Referring initially to FIGS. 2, 14, 15 and 17, the preferred tape cassette housing 26, which is shown in a rear view thereof in FIG. 2, preferably includes an upstanding portion 74 having a plurality of passageways, with four such passageways 76, 78, 80 and 82 being illustratively shown in the embodiment of FIGS. 2, 7, 15 and 17, arranged in a predetermined pattern for providing a predetermined playback authorization code associated with the storage media or multitrack tape 24 contained within the cassette housing 26. As will be described in greater detail hereinafter, this predetermined authorization code provided via passageways 76, 78, 80 and 82 by way of example, is an optically readable code. In such an instance, the playback security system 68 preferably includes an insertion security portion 84 which is responsive to the optically readable playback authorization code for providing an insertion condition therefrom, and a condition responsive portion 86, such as most preferably a condition responsive logic network, operatively associated with the insertion security portion 84, as will be described in greater detail hereinafter with reference to FIG. 7, for controllably enabling the provision of the playback response from the multitrack tape 24 in response to the playback authorization code detected with respect to the inserted tape cassette housing 26.

Detailed Description Text (6):

The insertion security portion 84 preferably includes an illumination source 88 and a photodetector matrix array 90 with the tape cassette housing 26 preferably being removably insertable into a keyway 92 (FIGS. 14 and 17) in the housing 22a for the verbal interactive toy apparatus 20 so that the upstanding portion 74 of cassette

housing 26 is disposed between illumination source 88 and photodetector matrix array 90 with the passageways 76, 78, 80 and 82 preferably being in optical registration with the illumination source 88 and photodetector matrix array 90, as illustratively shown in FIG. 2. The illumination source 88 preferably comprises a plurality of conventional light emitting diodes, with 13 such light emitting diodes 94 being utilized in the exemplary configuration of FIG. 7. In addition, if desired, the illumination source 88 may also comprise an equal plurality of conventional optical fibers or light pipes 96 with one such light pipe 96 preferably being provided for each of the light emitting diodes in optical alignment therewith with the entrance end of the light pipe 96 being adjacent the light emitting diode and with the exit end of the light pipe 96 being adjacent a given position with respect to the upstanding portion 74 so as to transmit light in a optical path transversely across a given path intersected by upstanding portion 74 to an adjacent phototransistor 98 located in the photodetector matrix array 90 which preferably comprises a plurality of conventional phototransistors 98 equal in plurality to the plurality of light emitting diodes 94 and associated light pipes 96. There is of course at least one light emitting diode-light pipe 94-96 illumination source associated with each of the light transmitting passageways 76, 78, 80 and 82 provided in upstanding portion 74 and one corresponding phototransistor 98 in the photodetector matrix array 90 associated in optical alignment with these illumination sources 94-96 at the opposite end of the corresponding light transmitting passageways 76, 78, 80 and 82 in upstanding portion 74. However, as shown and preferred in FIG. 7, for added security and in order to attempt to prevent "fooling the system" with unauthorized playback codes, such as by utilizing cassette housings 26 not having an upstanding portion 74 so that all of the illumination provided by illumination source 88 illuminates the complete photodetector matrix array 90, the illumination source 88 and the photodetector matrix array 90 preferably include a plurality of spurious locations which is illuminated by themselves or while the positions associated with the proper predetermined authorization code are also illuminated will provide a disable condition to the verbal interactive toy apparatus 20, thus keeping the circuit open between points 70 and 72 and preventing the operation of the verbal interactive toy apparatus 20, such as by disconnecting the power supply 64. As previously mentioned, FIG. 7 illustrates the use of a total of 13 photodetectors in the photodetector matrix array comprising four photodetectors 98a, 98b, 98c and 98d (FIG. 7.) associated in optical alignment with light transmitting passageways 76, 78, 80 and 82 when the cassette housing 26 is received in receptacle 92 with four corresponding light emitting diodes-light pipe illumination sources 94-96 being associated therewith, and nine photodetectors, 98e through 98m, inclusive, associated with nine such spurious positions which spurious position photodetectors 98e through 98m are in optical alignment with nine corresponding light emitting diodes-light pipe illumination sources 94-96. As shown and preferred in FIGS. 2, 7, 15 and 17, when the cassette housing 26 having the upstanding portion 74 containing the proper or correct predetermined playback authorization code defined by the light passageways 76, 78, 80 and 82 therein is inserted in keyway 92, only photodetectors 98a, 98b, 98c and 98d will be illuminated with the balance of portion 74 preferably serving to block the balance of the optical paths associated with photodetectors 98e through 98m so that these photodetectors will not be illuminated by the corresponding optically aligned illumination sources 94-98.

Detailed Description Text (7):

As shown and preferred in FIG. 7, the condition responsive logic network 86 portion of the playback security system 68 preferably comprises a pair of conventional AND gates 100 and 102 and, in the example shown in FIG. 7, a pair of conventional OR gates 104 and 106 which OR gates 104 and 106 preferably have conventional logic inverters 108 and 110, respectively, connected to the outputs thereof. In addition, a conventional transistor switch 112 is preferably connected to the output of AND gate 102 between points 70 and 72 which switch 112 is normally biased to the open or disable condition providing an open circuit between points 70 and 72 except when an enable signal is provided at the output of AND gate 102 thereby conventionally

closing transistor switch 112 so as to complete the circuit between points 70 and 72. As shown and preferred in FIG. 7, the output of AND gate 100 is provided as one input to AND gate 102 via path 114, with the other inputs to AND gate 102 preferably being the output of inverter 108 provided via path 116 and the output of inverter 110 provided via path 118. AND gate 100 is preferably associated solely with the correct predetermined playback authorization code and accordingly the inputs thereto are the outputs of photodetectors 98a, 98b, 98c and 98d provided via paths 120, 122, 124 and 126, respectively. OR gates 104 and 106, on the other hand, are preferably solely associated with the spurious or unauthorized code positions in the photodetector matrix array 90, with OR gate 104 having its input connected to the outputs of photodetectors 98e, 98h, 98i, 98l and 98m of array 90 via paths 128, 130, 132, 134 and 136, respectively, and with the inputs of OR gate 106 preferably being connected to the outputs of photodetectors 98f, 98g, 98j, and 98k of array 90 via paths 138, 140, 142 and 144, respectively. Of course, if desired, only one such OR gate can be utilized. Moreover, more or less spurious or unauthorized code positions can be provided in the photodetector matrix array 90 depending on the desired level of security to be provided by the playback security system 68 as well as on the desired sophistication of the correct predetermined playback authorization code, which sophistication is dependent on the selected desired pattern of light transmitting passageways for upstanding portion 74.

Detailed Description Text (8):

The preferred playback security system 68 illustrated in FIGS. 2, 7, 15 and 17 preferably operates in the following manner. When a cassette housing 26 is inserted in keyway 92, with the illumination source 88 and photodetector matrix array 90 being ON, via a conventional power supply therefor as well as for the logic 86 which power supply is not shown, light provided from the illumination source 94-96 strikes or illuminates the various positions defined by the photodetector matrix array 90. In order for AND gate 100 to provide an authorization logic output condition via path 114, which in the example of the logic shown would be a logic one, all of the inputs 120, 122, 124 and 126 thereto must also be logic 1. The photodetectors 98a, 98b, 98c and 98d off array 90 must all be illuminated thereby providing digital signal information comprising the aforementioned logic ones via paths 120, 122, 124 and 126. In such an instance, a logic 1 is provided as an input to the AND gate 102 via path 114. With respect to OR gates 104 and 106, if the inserted cassette housing 26 contains the correct predetermined playback authorization code via the light passageway arrangement of upstanding portion 74, then none of the spurious position photodetectors 98e through 98m in the photodetector matrix array 98 will be illuminated and correspondingly the outputs thereof will be logic zeros, which digital signal information will thereby be present at the corresponding inputs 128 through 144, inclusive, of OR gates 104 and 106. Since all of the inputs, in this instance, to OR gate 104 will be a logic zero, the output thereof provided via path 150 to the input of inverter 108 will be a logic zero and, similarly, since all of the inputs to OR gate 106, in this instance, will be a logic zero, the output of OR gate 106 via path 152 which is provided to the input to inverter 110 will also be a logic zero. In such an instance, the output of inverter 108 via path 116 will be a logic one and, similarly, in such an instance, the output of inverter 110 via path 118 will also be a logic one. Thus, the three inputs to AND gate 102 when solely photodetectors 98a, 98b, 98c and 98d are illuminated, indicating that the cassette housing 26 contains the correct predetermined playback authorization code, will all be logic ones resulting in a logic one or enable output from AND gate 102 via path 154 to enable transistor switch 112, thereby closing switch 112 and completing the circuit path between points 70 and 72 as long as such enable output via path 154 is provided to transistor switch 112. However, if an unauthorized playback authorization code is present with respect to the insertion of a cassette housing 26, so that either any one of the photodetectors 98a, 98b, 98c, 98d associated with the correct predetermined playback authorization code is not illuminated or any one of the photodetectors associated with the spurious locations indicative of an unauthorized playback authorization code, namely photodetectors 98e through 98m,

is illuminated, then AND gate 102 will not provide an enable output via path 154 to transistor switch 112, thus leaving transistor switch 112 in a disable condition in which the circuit path between points 70 and 72 is open or, if transistor switch 112 had previously been enabled as described above, then, once again, conventionally disabling transistor switch 112 so as to reopen the circuit path between points 70 and 72. This will occur because if any one of the inputs 120 through 124 to AND gate 100 is a logic zero, such as will occur if an associated photodetector 98a through 98d is not illuminated, then the output of AND gate 100 via path 114 will not be a logic one but instead will be a logic zero whose presence at one of the inputs of AND gate 102 will prevent the provision of the enable signal via path 154 since the output of AND gate 102 in such an instance, cannot be a logic one. Similarly, if any one of the inputs to OR gate 104 is a logic one as will occur if any one of the associated photodetectors 98e, 98h, 98i, 98l or 98m is illuminated, then the output of OR gate 104 via path 150 will be a logic one resulting in a logic zero via path 116 at the output of inverter 108, once again providing a logic zero or disable signal at the output of AND gate 102 via path 154. Similarly, if any one of the inputs to OR gate 106 is a logic one, as will result if any of the associated photodetectors 98f, 98g, 98j or 98k is illuminated, then the output of OR gate 106 via path 152 will be a logic one resulting in a logic zero via path 118 at the output of inverter 110, once again causing a logic 0 or disable signal to be present at the output of AND gate 102 via path 154. All of the logic described above with respect to FIG. 7 is preferably positive logic although, if desired, negative logic could be utilized with corresponding changes in the logic gating network.

Detailed Description Text (10):

Referring now to FIGS. 4, 5, 6 and 16, an alternative embodiment of the playback security system 68 of the present invention, generally being referred to by the reference numeral 68a, is shown and shall be described. This embodiment 68a may also be preferably connected between points 70 and 72 (FIG. 1) in place of the embodiment 68 of FIGS. 2, 7, 15 and 17. As with respect to the preferred embodiment of the playback security system 68 previously described with reference to FIGS. 2, 7, 15 and 17, the tape cassette housing 26 preferably includes an upstanding portion 74a similar to previously described upstanding portion 74 having a plurality of passageways therein with four such passageways 76a, 78a, 80a and 82a being provided for providing the same correct predetermined playback authorization code, by way of example, previously described with reference to FIG. 15. In addition, the playback security system 68a also preferably includes an insertion security portion 84a and a condition responsive portion 86a (FIG. 5.) operatively associated therewith for controllably enabling the provision of the playback response from the multitrack tape 24. However, in place of the optically readable code for providing the insertion condition therefrom, a "mechanically readable" code is provided by passageways 76a, 78a, 80a and 82a in conjunction with pin members 180, 182, 184 and 186 comprising the insertion security portion 84a, with one such pin member 180 through 186, inclusive, being provided for each correct position in the correct predetermined authorization code pattern or configuration. As also shown and preferred in FIGS. 5, 6 and 16, the upstanding portion 74a also preferably includes an upstanding protrusion, such as a globe or ball 188 for enabling closure of a conventional spring-biased microswitch 190 contained in the condition responsive portion 86a, when the cassette housing 26 contains the correct predetermined authorization code, as will be described in greater detail hereinafter. Thus, as previously mentioned, the condition responsive portion 86a preferably includes a spring-biased microswitch 190 connected between points 70 and 72 which switch 190 is preferably normally biased to the disable or open circuit condition providing an open circuit path between points 70 and 72 thus disabling the verbal interactive toy apparatus 20. When the cassette housing 26 is inserted in keyway 92 (FIG. 6), if the correct playback authorization code is defined in upstanding portion 74a, passageways 76a, 78a, 80a and 82a will be mechanically registrable with corresponding pins 180, 182, 184 and 186 so that these pins 180, 182, 184 and 186 will permit insertion of cassette housing 26 into

the playback position by extending through the corresponding passageways 76a, 78a, 80a and 82a in upstanding portion 74a. In addition, when these pins 180 through 186 have extended through the corresponding passageways 76a through 82a, globe 188 will be beneath spring-biased microswitch 190 and, because of the confines of the keyway 92 and the location of the microswitch 190 therein, globe 188 will mechanically force microswitch 190 into the closed position illustrated in FIG. 5 by overcoming the normal bias force of the spring-biased microswitch 190 which normally biases microswitch 190 to the open position, thereby placing switch 190 in the enable condition and completing the circuit path between points 70 and 72, thus enabling the verbal interactive toy apparatus 20. If, however, the correct playback authorization code, or pattern of passageways defining said code, is not provided, then the pins 180, 182, 184 and 186, will prevent the insertion of the cassette housing 26 and, thus, will prevent engagement of means, such as globe 188, for overcoming the biasing force of microswitch 190 to close microswitch 190. Thus, the switch 190 would remain in an open or disable condition, and the playback security system 68a would disable the verbal interactive toy apparatus 20.

Detailed Description Text (12):

As shown and preferred in FIGS. 13 and 14, the verbal interactive toy apparatus 20 or 20a is preferably housed in a robot-like housing 22a, such as the type of robot-like housing described in U.S. Pat. No. 3,947,972 for enhancing the verbal interactive or conversational real time user response apparatus environment of the toy. Such a robot-like housing, may preferably include a head portion 220 which is shown, by way of example, as having eyes, a nose and a mouth arranged in the exemplary correct predetermined playback authorization code with, if desired, a globe 222 at the top thereof which may contain a globe lamp 222 of the type described with reference to U.S. Pat. No. 3,947,972. The housing 22a preferably includes the buttons 40 through 56, inclusive, arrayed on the front thereof. However, as shown and preferred, a removable template 224 having corresponding alignable apertures therein, is preferably placeable over the button array 40 through 56, and removably held thereon, such as by means of conventional Velcro strips 226 and 228, for labeling the buttons 40 through 56, inclusive, dependent on the information stored on the multitrack tape 24 to be used at a given time in the housing 22a. As previously described, the front of the housing 22a also preferably includes keyway 92 for enabling insertion of the cassette housing 26 therein. Thus, for example, the template 224 may comprise the label arrangement for buttons or switches 40 through 56, illustrated in FIGS. 1, 8, 9 and 10 for one type of information storage or, by way of another example, may comprise the label configuration illustrated in FIG. 13 if the information stored on the multitrack tape 26 is to be a mathematical information format where it may be desired to have button 40 correspond to the "question," button 42 correspond to "choice A," button 44 correspond to "greater than," button 46 correspond to "true," button 48 correspond to "choice B," button 50 correspond to "false," button 52 correspond to "less than," button 54 correspond to "choice C" and button 56 correspond to "equal to." Any other desired "label configuration" could also be provided dependent on the information stored on the tape 4 with the correct template 224, if desired, being provided along with the corresponding tape 24, thus increasing the play value of the toy by significantly increasing its flexibility. If desired, the aforementioned robot-like housing 22a may also include mechanically movable arms 230 and 232 and legs 234 and 236 whose mechanical movement may be conventionally accomplished for further increased play value.

Detailed Description Text (13):

Referring now to FIG. 10, another embodiment of a robot-like housing 22 for the verbal interactive toy playback apparatus 20 or 20a of the present invention is shown. Preferably, robot-like housing 22 is identical with previously described robot-like housing 22a (FIG. 14) with the exception of the provision of a belt pack housing 250 in which a removable belt pack 252 to be described with reference to FIGS. 11 and 12 is removably insertable, with the belt pack housing 250 and removable belt pack 252 providing a playback security system for the verbal

interactive toy apparatus 20 or 20a housed in robot-like housing 22 in place of the previously described playback security system 68 or 68a. Such an arrangement 250-252 is also preferably electrically connected between points 70 and 72 (FIG. 1) in place of the previously described embodiments 68 or 68a. As shown and preferred in FIG. 11, the belt pack housing 250 preferably comprises a unique receptacle configuration in place of keyway 92 with an exemplary configuration being illustrated in FIG. 11 having uniquely configured insert portions 254, 256, 258, 260 and 262 providing a predetermined playback authorization code insertion configuration. Portion 258 preferably comprises the location of the conventional spindles 264 and 266 for the storage and take-up reels 27a and 29a for the tape 24 as well as containing the capstan drive 28-30-32 mechanism therefor. In addition, the magnetic playback head 34 or 34a is preferably located therein in playback alignment with the inserted tape 24. As further shown in FIG. 12, the removably insertable belt pack 252 preferably comprises a complementary geometric configuration of protrusions 254a, 256a, 258a, 260a and 262a which when belt pack 252 is inserted in belt pack housing 250, fit into the corresponding complementary apertures 254 through 262, as indicated by the dotted lines extending between FIGS. 11 and 12. In addition, the protrusion 262a on the belt pack 252 is arranged so that when it is inserted into complementary aperture 262, it will close a conventional electrical interlock 190a, such as the conventional spring-biased microswitch 190 previously described with reference to FIGS. 4 through 6. This electrical interlock 190a is preferably interconnected between points 70 and 72, as was described with reference to the playback security system 68 or 68a for enabling the verbal interactive toy apparatus 20 or 20a when inserted therein and disabling the verbal interactive toy apparatus 20 or 20a when such electrical interlock 190a is not closed, the switch 190a normally being biased to the disable or open circuit condition. Thus, belt pack 252 may be utilized in place of the type of tape cassette housing 26 previously described with reference to the playback security system 68 or 68a with the unique pattern of complementary protrusions 254a through 262a providing the playback authorization code. Preferably, the tape 24 is permanently secured to the belt pack 252 so that a different belt pack 252 would normally have to be utilized to provide a different tape 24 for insertion in the robot-like housing 22 to be played back on the playback apparatus 20 or 20a.

Detailed Description Text (14):

If desired, as shown in FIG. 18, and in dotted lines in FIG. 11, a plurality of identical type electrical interlocks 109a-190d, inclusive, may be utilized in belt pack housing 250 with one such electrical interlock 190b, 190c, 190d and 190a, respectively being associated with each complementary aperture or receptacle 254, 256, 258, 260 and 262, respectively, by way of example. In such instance, each of the interlocks 190a-190d, inclusive, comprises a conventional spring-biased microswitch identical to switch 190, normally spring biased to the open circuit or disable condition. As shown and preferred in FIG. 18, this plurality of switches 190a-190d, inclusive, are preferably electrically interconnected in series between points 70 and 72 for keeping the verbal interactive toy apparatus 20 or 20a in a disable condition unless all of the switches 190a, 190b, 190c and 190d are simultaneously closed by insertion of corresponding complementary protrusions 262a, 254a, 256a and 260a in corresponding apertures 262, 254, 256 and 260, respectively, as was previously mentioned with respect to switch 190a, thereby corresponding to provision of the correct predetermined playback authorization code. If all of the required complementary protrusions are not present on a belt pack 252 being inserted in belt pack housing 250, then the series circuit of FIG. 18 between points 70 and 72 will not be completed and an open circuit or disable condition for the verbal interactive toy apparatus 20 or 20a will remain.

CLAIMS:

1. A real time conversational verbal interactive toy apparatus comprising a removably insertable magnetic storage medium having a housing for said storage medium, said magnetic storage medium comprising a plurality of coextensive

multipurpose audio tracks capable of having audio information stored thereon for multipurpose audio playback therefrom; receptacle means for removably receiving said inserted storage medium housing with said storage medium in a playback position thereof; audio playback means adjacent said multitrack storage medium and in alignment therewith in said playback position of said received inserted storage medium housing for selectively obtaining said stored audio information from each of said coextensive tracks; multiple choice multipurpose selection means operatively connected to said playback means for directly selecting one of said tracks for reproducing said selected information stored thereon in accordance with a predetermined variable purpose for said multipurpose audio track; and audio output means operatively connected to said playback means and said direct selection means for directly providing said selected track information from said selectively obtained stored audio information for selectively reproducing said information as an audio output therefrom, said information being stored on each track in a plurality of reproducible information segments, each of said segments comprising a complete message reproducible by said playback means directly in response to the selection of said track upon which said segments are stored, each of said information segments on each of said coextensive tracks being spatially related in real time along said tracks and related in content to said information segments on the other of said coextensive tracks in said plurality thereof, said selection means comprising means for designating only one of said coextensive tracks as an interrogatory message track with said information stored thereon comprising interrogatory messages and for designating said other of said coextensive tracks as responsive message tracks with said stored information thereon comprising selectable responsive messages spatially related along said other tracks in said real time and related in content to said interrogatory messages on said one designated interrogatory message track dependent on said predetermined purpose for said multipurpose tracks, each of said tracks having substantially the same associated track width, said verbal interactive toy having a timed relationship between adjacent successive interrogatory messages solely dependent on the spatial relationship between said adjacent successive interrogatory messages on said one designated interrogatory message track and said responsive messages on said other tracks whereby said verbal interactive toy apparatus is capable of controlling verbal interaction in real time solely dependent on said spatial relationship, said interrogatory message containing a predetermined category of response thereto, each of said predetermined variable purposes corresponding to a different category of response to said interrogatory messages on said designated interrogatory message track, said multipurpose selection means enabling said category of response to be varied in accordance with a variation in said predetermined category of response contained in said interrogatory message on said designated real time related interrogatory message track; insertion security means operatively associated with said receptacle means for providing an insertion condition for said inserted received multitrack magnetic storage medium housing with respect to said receptacle means, said multitrack storage medium housing having means disposed thereon comprising a playback authorization code for reproduction from said multitrack storage medium, said insertion security means comprising means responsive to said playback authorization code for providing said insertion condition therefrom; and condition responsive means operatively associated with said insertion security means for controllably enabling the provision of said selectable reproduction of said selected information from said multitrack storage medium, said playback means having an enable condition and a disable condition for enabling the provision of said selectable reproduction therefrom only in said enable condition thereof, said condition responsive means being responsive to said insertion security means provided insertion condition for providing said enable condition to said playback means only when said provided insertion condition corresponds to a predetermined playback authorization code, whereby only a magnetic storage medium capable of providing said real time conversational type response to an interrogatory message may be employed in said verbal interactive toy apparatus for ensuring secure provision of said real time conversational type response; said multiple choice multipurpose selection means comprising a plurality of switch means, one of said

switch means being associated with each of said plurality of audio tracks, at least one of said switch means associated with one of said selectable other designated responsive message tracks comprising a parallel connected switch bank having a plurality of separately operable different single purpose switch members, each of said different single purpose corresponding to a different category of response to an associated real time related interrogatory message, means associated with said switch bank whereby only one of said switch members is operable at a time for said direct selection of said one associated track dependent on said predetermined category of response, said predetermined category of response being defined in said real time related interrogatory message on said interrogatory message track, whereby the category of multiple choice response to said interrogatory messages may be varied and said real time conversational type response may be ensured for each category; said one interrogatory message containing track further comprising associated multiple choice selectable responses to a particular interrogatory message, said other tracks comprising responsive messages related in real time and content to said interrogatory messages and corresponding to said multiple choice selectable responses, only one of said plurality of other tracks comprising the correct selectable responsive message to a particular real time related interrogatory message.

5. An apparatus in accordance with claim 4 wherein said audio playback means comprises a movable single track audio playback head selectively movable from track to track of said multitrack magnetic storage medium dependent on said track selected, said multiple choice multipurpose selection means comprising means for moving said single track audio playback head into alignment with said selected track for enabling said reproducing of said selected information stored thereon when said provided insertion condition corresponds to a predetermined playback authorization code.

6. An apparatus in accordance with claim 1 wherein said audio playback means comprises a movable single track audio playback head selectively movable from track to track of said multitrack magnetic storage medium dependent on said track selected, said multiple choice multipurpose selection means comprising means for moving said single track audio playback head into alignment with said selected track for enabling said reproducing of said selected information stored thereon when said provided insertion condition corresponds to a predetermined playback authorization code.

10. An apparatus in accordance with claim 9 wherein said authorization code comprises an optically readable code, said insertion security means responsive to said playback authorization code comprising means responsive to said optically readable code for providing a digital signal therefrom to said logic gating means, said digital signal comprising said insertion condition, said logic gating means being responsive to said provided digital signal for providing said enable condition only when said provided digital signal corresponds to said predetermined authorization code.

11. An apparatus in accordance with claim 10 wherein said digital signal providing means comprises means for providing digital signal information corresponding to an unauthorized playback code and digital signal information corresponding to said predetermined playback authorization code, said logic gating means comprising first AND gate means operatively connected to said digital signal providing means for solely receiving said digital signal information corresponding to said predetermined authorization code for providing a first authorization logic output condition when said digital signal information corresponding to said predetermined authorization code is received thereby, second OR gate means operatively connected to said digital signal providing means for solely receiving said digital signal information corresponding to said unauthorized playback code for providing a first state output condition when said digital signal information corresponding to said unauthorized playback code is received thereby and a second state output condition

when said digital signal information corresponding to said unauthorized playback code is not received thereby, first logic inverter means operatively connected to the output of said second OR gate means for inverting said state output condition thereof for providing a second authorization logic output condition from said first logic inverter means only when said second state output condition is provided thereto from said second OR gate means, and third AND gate means operatively connected to said first AND gate means and said first logic inverter means means outputs for providing said enable condition solely when said first and second authorization logic output conditions are present.

14. An apparatus in accordance with claim 13 wherein said digital signal providing means comprises a photodetector matrix array and an illumination source optically registrable therewith, said optically readable authorization code providing means comprising a plurality of light transmitting passageways in said housing disposable in said insertion security means between said illumination source and said photodetector matrix array in optical registration therewith for enabling selective illumination of said photodetector matrix array through said housing light transmitting passageways for providing said digital signal information dependent on said selectively illuminated photodetector matrix array, said photodetector matrix array being operatively connected to said first AND gate means and second OR gate means for providing said digital signal information thereto.

18. An apparatus in accordance with claim 11 wherein said digital signal providing means comprises a photodetector matrix array and an illumination source optically registrable therewith, said optically readable authorization code providing means comprising a plurality of light transmitting passageways in said housing disposable in said insertion security means between said illumination source and said photodetector matrix array in optical registration therewith for enabling selective illumination of said photodetector matrix array through said housing light transmitting passageways for providing said digital signal information dependent on said selectively illuminated photodetector matrix array, said photodetector matrix array being operatively connected to said first AND gate means and second OR gate means for providing said digital signal information thereto.

23. An apparatus in accordance with claim 1 wherein said receptacle means comprises a unique keyway for insertion of said housing for controllably enabling placement of said housing with said storage medium in said playback position thereof, said disposed housing authorization code means comprising means cooperable with said keyway for enabling said housing insertion.

24. An apparatus in accordance with claim 1 wherein said insertion security means further comprises detection means disposed in cooperation with said receptacle means for positively defining a composite detection pattern cooperable with said playback authorization code disposed on said storage medium housing, said composite detection pattern detection means comprising a first plurality of detectors dispersed throughout said composite pattern solely in positions defining a pattern corresponding to said predetermined playback authorization code and a second plurality of detectors dispersed throughout said first plurality of predetermined playback authorization code corresponding pattern defining detectors solely in predetermined positions positively defining spurious locations in said playback authorization code corresponding pattern, said insertion condition providing playback authorization code responsive means comprising means responsive to both said first and second plurality of detectors for providing said insertion condition, said condition responsive means providing said enable condition when said provided insertion condition corresponds solely to said predetermined playback authorization code and said positively defined spurious locations are not detected, whereby the provision of an erroneous enable condition is minimized upon insertion of an unauthorized storage medium housing in said receptacle means.

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L2: Entry 5 of 9

File: USPT

Jan 5, 1999

DOCUMENT-IDENTIFIER: US 5857020 A

TITLE: Timed availability of secured content provisioned on a storage mediumBrief Summary Text (2):

The present invention relates, generally, to distribution of secured prerecorded content and, in particular, to a method and an apparatus for enabling access, dependent upon timed availability, to the secured content provisioned on a storage medium,

Brief Summary Text (9):

It is an object of the present invention to provide a new and improved method and apparatus for enabling access, dependent upon timed availability, to secured content provisioned on a storage medium.

Drawing Description Text (3):

FIG. 1 is a block diagram representation of a first embodiment of an apparatus for unlocking, dependent upon timed availability, a secured content provisioned on a storage medium;

Detailed Description Text (3):

Now having regard to FIGS. 1 and 2 together, illustrated in FIG. 2 is a time line chart to exemplify various timed availability schemes, in accordance with the present invention, that are implemented by the apparatus of FIG. 1. One such scheme is to not allow access to the secured contents of the storage medium 10, having been distributed in advance, until a predetermined date and time. This scheme is otherwise referred to herein as a "premier event" type availability of the secured contents. For instance, a consumer may receive the storage medium 10 at time T0 after which there exists a time window W0 within which the consumer may, via the controller 14 and PSTN 18 in this particular embodiment, communicate with the authorization center 16 to request and subsequently receive authorization to access the contents of the storage medium 10. This process of requesting and receiving authorization is represented by the arrow at time T1. Authorization normally is granted on receiving payment from the consumer, in this case, for the requested premier event usage. The controller 14, however, will not enable access to the secured content until the date and time, represented by T2, which is associated with the premier event. Following time T2, a second timed availability scheme is exemplified wherein the consumer requests authorization from the center 16 and receives same in return for payment at time T3, whereby another time window W1 is initiated. The payment for authorization at T3 may be less than that for the premier event made at T1. During window W1, the consumer may be allowed unlimited use of the content on the storage medium 10, as represented by times T4 and T5. This authorization is terminated following expiry of window W1 and thereafter is another window W2 which is initiated by the consumer requesting and receiving authorization at T6, in order to again access the secured content, at T7. A further scheme is to vary the lengths of successive windows, for instance, from one week, to one month and possibly indefinitely. Moreover, only a single use of the content may be allowed which use must occur within the authorized window. It is also possible to implement a combination of the above timed availability schemes, such as, defining a first window during which only single usage is authorized and thereafter defining a succession of windows which begin with a specified number of

allowed uses and gradually increase the allowed number over consecutive windows to eventually allow unlimited access. A yet further variant is to provide an absolute expiration date, indicated at time T8, after which it will not be possible to access the secured content thereby effectively removing or withdrawing it from the commercial market. Although the consumer will still have possession of the actual storage medium, on and after time T8 unlocking of the secured content will not be authorized.

Detailed Description Text (9):

In this particular embodiment of the controller 14, the secure card 42 is programmed to provide a time of day (TOD) clock 52, a consumer identifier 54, a private key 55, a list 56 of authorization records and a block decryption key (K.sub.i) generator 58. The TOD clock 52 represents means for measuring time and is a well known capability consisting of a time clock and a date calendar, the settings for which may be password protected and either set online by the authorization center 16 or preset prior to issuance of the card 40 if it includes a battery cell whereby the clock circuit is constantly powered. Hence, the TOD clock 52 may not be altered by the consumer thereby ensuring compliance with the timed availability conditions for the secured content 28. The consumer identifier 54 is effectively an account number by which a particular consumer is known at the authorization center 16. The private key 54 may be a RSA (i.e., Rivest, Shamir and Adleman) key that is uniquely associated with the consumer and corresponds to a public key held at the authorization center 16, but the private key 54 is not known by the authorization center 16. The list of authorization records 56 contains a separate record for each secured content to which access has already been authorized by the authorization center 16. Each authorization record contains: the identifier 24 of the secured content 28 on storage medium 10; a start date and time at which access thereto may be enabled; an expiration date and time after which authorization lapses or is no longer in effect; a limit for usage; and a key K on which securing of the data content 28 was based. The start and expiration dates and times define the window or period of timed availability during which access to the secured content 28 may be enabled. The usage limit defines the number of accesses to the secured content that may be made during the window and typically is either one or unlimited.

Detailed Description Text (13):

In operation, a consumer normally receives, in advance of a predetermined premier event date, a storage medium 10 having secured content 28, for instance, a DVD disk containing a movie production which is encrypted together with non-secured (non-encrypted) data 24 including a sample trailer and audio/visual instructions explaining particulars for access to the encrypted movie. The consumer would apply the medium 10 (DVD disk) to the medium reader 12 and the output 20 thereof would be connected, in this particular context, to a television set or monitor of a home theater system. The processor 32 of controller 14 forwards any non-encrypted video data received from the reader 12, without any processing of the that data, back to the reader 12 which in turn processes the data stream to generate appropriate analog video signals at its output 20, thereby allowing the consumer to access and view the trailer and instructions but not the actual movie. If interested in viewing the movie production, the consumer indicates this desire to the controller 14 by depressing an appropriate key on the keypad 36 which generates a corresponding signal that is received by the processor 32. Responsive thereto, the processor 32 first determines whether an authorization record already exists in the list 56 for the identifier 24 provided on the medium 10 and received from the reader 12.

Detailed Description Text (18):

Another embodiment of the apparatus, in accordance with the invention, to unlock secured data of a storage medium dependent upon timed availability is illustrated in FIG. 3. The content of the storage medium 70 includes, as visually represented by reference 72, control data 74 in addition to the content identifier 76, the non-

secured data 78 and the secured data 79. The control data 74 may comprise premier date and time values 80 with associated cost 81, window definition parameters specifying a time limit 82, usage limit 83 and cost 84 subsequent to premier event, and an absolute expiration date 85 after which access to the secured content will not be granted. Furthermore, in this embodiment of the controller 86 the secure card 88 is programmed to provide the TOD clock 90 and as well maintain an amount of funds 91 prepaid by the consumer, a list 92 of authorized access records and a decryption key 93. The amount of prepaid funds 91 may be adjusted in return for receiving monetary compensation and the particular decryption key 93 updated periodically, for instance, by an authorization center (not shown) which the consumer may visit for manual updating of these values or through an automatic online process.

Detailed Description Text (21):

Although the above embodiments describe attaching control conditions to a particular secured content, it should be apparent to a skilled artisan that a possible variant is to incorporate a single set of control data into the memory of the controller whereby the control data may be applied as the default timed availability conditions to unlocking of all secured content. Another variant is to build a secure memory and secure TOD clock directly into the controller as a substitute to utilizing the combination of a secure card and card reader/writer. A yet further variant is to have the consumer manually carry out the authorization request and grant process by placing a voice call to the authorization center and interact either with an automated or human attendant to obtain an authorization code, encoded into which would be the decryption key and which may then be entered manually at the controller though the keypad.

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1. Document ID: US 6671818 B1

L2: Entry 1 of 9

File: USPT

Dec 30, 2003

US-PAT-NO: 6671818

DOCUMENT-IDENTIFIER: US 6671818 B1

TITLE: Problem isolation through translating and filtering events into a standard object format in a network based supply chain

2. Document ID: US 6606744 B1

L2: Entry 2 of 9

File: USPT

Aug 12, 2003

US-PAT-NO: 6606744

DOCUMENT-IDENTIFIER: US 6606744 B1

TITLE: Providing collaborative installation management in a network-based supply chain environment

3. Document ID: US 6591251 B1

L2: Entry 3 of 9

File: USPT

Jul 8, 2003

US-PAT-NO: 6591251

DOCUMENT-IDENTIFIER: US 6591251 B1

TITLE: Method, apparatus, and code for maintaining secure postage data

4. Document ID: US 5862117 A

L2: Entry 4 of 9

File: USPT

Jan 19, 1999

US-PAT-NO: 5862117

DOCUMENT-IDENTIFIER: US 5862117 A

TITLE: Device, in particular a compact disc, comprising a data storage medium and an integrated circuit

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Abstract](#) | [Claims](#) | [KMC](#) | [Drawn D.](#)

5. Document ID: US 5857020 A

L2: Entry 5 of 9

File: USPT

Jan 5, 1999

US-PAT-NO: 5857020

DOCUMENT-IDENTIFIER: US 5857020 A

TITLE: Timed availability of secured content provisioned on a storage medium

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Abstract](#) | [Claims](#) | [KMC](#) | [Drawn D.](#)

6. Document ID: US 5825876 A

L2: Entry 6 of 9

File: USPT

Oct 20, 1998

US-PAT-NO: 5825876

DOCUMENT-IDENTIFIER: US 5825876 A

TITLE: Time based availability to content of a storage medium

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Abstract](#) | [Claims](#) | [KMC](#) | [Drawn D.](#)

7. Document ID: US 5757917 A

L2: Entry 7 of 9

File: USPT

May 26, 1998

US-PAT-NO: 5757917

DOCUMENT-IDENTIFIER: US 5757917 A

**** See image for Certificate of Correction ****

TITLE: Computerized payment system for purchasing goods and services on the internet

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Abstract](#) | [Claims](#) | [KMC](#) | [Drawn D.](#)

8. Document ID: US 5473687 A

L2: Entry 8 of 9

File: USPT

Dec 5, 1995

US-PAT-NO: 5473687

DOCUMENT-IDENTIFIER: US 5473687 A

TITLE: Method for retrieving secure information from a database

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Claims](#) | [KMC](#) | [Drawn D](#)

9. Document ID: US 4117605 A

L2: Entry 9 of 9

File: USPT

Oct 3, 1978

US-PAT-NO: 4117605

DOCUMENT-IDENTIFIER: US 4117605 A

TITLE: Real time conversational toy having secure playback response

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Claims](#) | [KMC](#) | [Drawn D](#)

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